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**STUDENT'S MANUAL  
OF  
CAVITY PREPARATION**

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OF  
CAVITY PREPARATION



# STUDENT'S MANUAL OF CAVITY PREPARATION

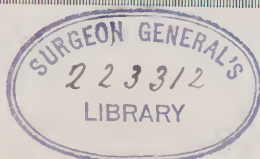
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BY

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## PREFACE

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Realizing the need of a manual to aid the beginning student to acquire the proper knowledge of cavity preparation, this volume has been prepared. Its purpose is to impart to the student a knowledge of the correct cavity form for gold and amalgam. It is not intended as a text to treat of operative procedure, instrumentation or technic.

The illustrations are all original, but the cavity forms are those set forth in the standard texts on operative dentistry.

If this little manual proves beneficial to the student in acquiring correct ideas of cavity form, its purpose will have been fulfilled.

—J. E. S.

St. Louis, Mo.



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# CAVITY PREPARATION

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## CAVITY CLASSIFICATION

Cavities are classified according to the nature of the surfaces upon which they occur into two general divisions.

### *1. Pits and Fissure Cavities*

These occur in pits, fissures and deep grooves in the occlusal surfaces of bicuspid and molars; in pits in the occlusal half of buccal surfaces of molars; and in pits in the lingual surfaces of incisors.

### *2. Smooth Surface Cavities*

These occur on smooth surfaces which are not kept clean by process of mastication, or by tongue, lips or cheeks. Such surfaces are the proximating surfaces of the teeth and the gingival third of the crown of all teeth on their labial or buccal and lingual surfaces.

Cavities are also divided as to form. Dr. Black, whose works on operative dentistry are without a doubt our best authority, has classified them by number, as follows:

*Class 1.* These occur in occlusal surfaces of bicuspid and molars, in occlusal two-thirds of the buccal surfaces of molars, in the lingual surfaces of upper incisors and occasionally in lingual surfaces of upper molars. This class includes all Pit and Fissure cavities; while all Smooth Surface cavities are included in classes 2, 3, 4 and 5.

*Class 2.* Cavities in proximal surfaces of bicuspid and molars.

*Class 3.* Cavities in proximal surfaces of incisors and cuspids, not including the incisal angle.

*Class 4.* Cavities in the proximal surfaces of incisors, including the incisal angle.

*Class 5.* Cavities occurring in gingival third of buccal, labial and lingual surfaces.

### ORDER OF PROCEDURE

The Institute of Dental Pedagogics gives the following order of procedure in cavity preparation :

*First*—Obtain outline form.

*Second*—Remove any remaining carious dentine.

*Third*—Obtain required retention form.

*Fourth*—Obtain the required convenience form.

*Fifth*—Obtain the required resistance form.

*Sixth*—Finish enamel wall.

*Seventh*—Make the toilet of the cavity.

### EXTENSIONS FOR PREVENTION

This means the extension of the cavity walls to such areas as will afford self-cleansing margins, thus preventing the recurrence of decay after a filling has been placed. This extension is always to be made in the preparation of proximal and gingival third cavities. In each case the extension is toward the axial line angles of the tooth for the reason that the regions of these angles are the least liable to the beginning of caries of any portion of the circumference of the tooth near the free margins of the gingiva. (Black.)

### NAMING OF CAVITY WALLS, LINES, ANGLES, ETC.

All cavity walls are named after the surface of the tooth with which they correspond.

Ex.—Mesial wall, (M, Fig. I).

Lingual wall, (L, Fig. I).

Pulpal wall, etc., (P, Fig. I).

The pulpal wall is the wall that is placed to the occlusal of the pulp and at right angles to the long axis of the tooth. When the pulp is removed the cavity is extended to the floor of the pulp, and the wall is then known as the sub-pulpal wall.

The axial wall of a cavity (A, Fig. 2) is one that is in the same plane as the long axis of the tooth and covers the pulp chamber.

The names of angles of cavities are derived from the walls which join to form them, as: disto-buccal line angle; mesio-pulpal angle; mesio-bucco-pulpal point angle; axio-disto-gingival point angle, etc., etc.

The cavo-surface angle of a cavity is formed by the junction of the surface of the tooth with the cavity wall.

The dento-enamel junction, as the name implies, refers to the line of junction of dentine with the enamel.

For purposes of description and dissection of teeth we have three general planes in common use:

The horizontal plane, which is at right angles to long axis of the tooth.

The axio-mesio-distal plane, which passes through tooth mesio-distally parallel with the long axis.

The axio-bucco-lingual plane, which passes bucco lingually through the tooth parallel with long axis.

The surfaces of teeth are also divided into divisions to aid in cavity description. These divisions are usually thirds, as, occlusal third, middle third, gingival third (gingivo-occlusally), buccal third, middle third and lingual third (bucco-lingually).

Fig. I.

Illustrates 1st class cavity prepared for filling. Note extension of cavity outline buccally and lingually along fissures to afford smooth surfaces for cavity margins.

Cavity walls (M L D) should all be at right angles to pulpal wall (P) of cavity, thus giving box form for retention; no pits, depressions or undercuts are to be made.

Cavo-surface margins of the enamel (C C C) should all be bevelled about one-quarter length of the enamel rods for gold fillings and full length of the enamel rods for amalgam fillings.



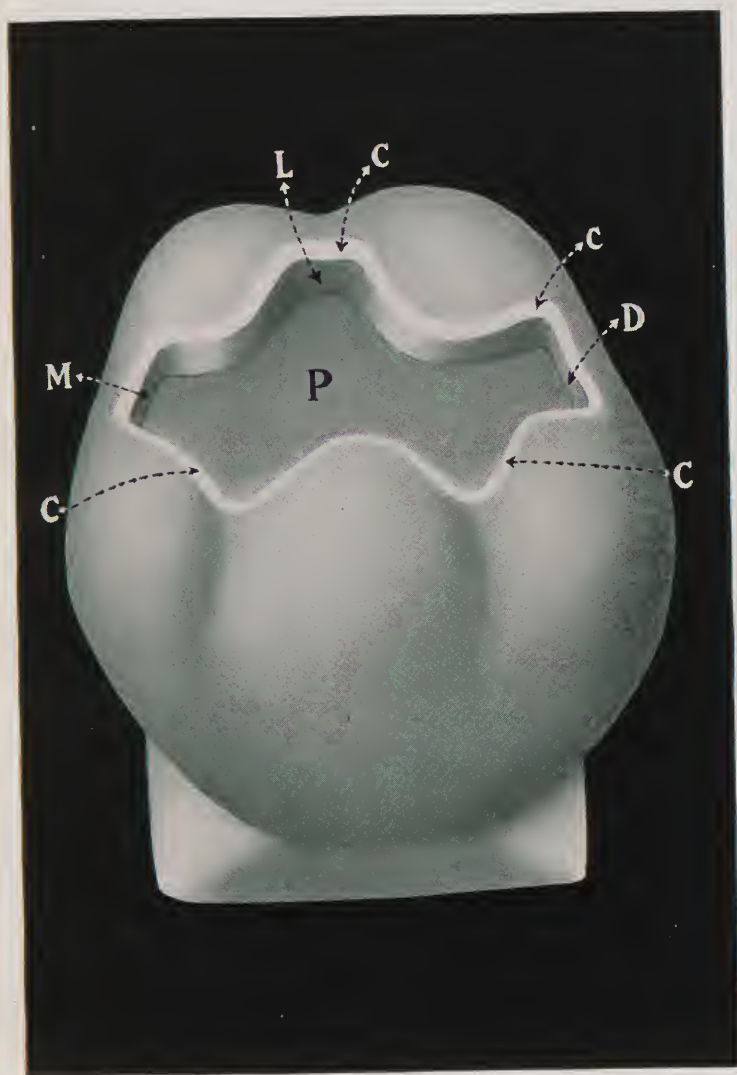


FIG. I.

Fig. II.

Illustrates 2nd class cavity prepared in upper bicuspid. The same principle of perpendicular walls and bevelling of margins that applies to 1st class cavity applies to occlusal part of this cavity also.

Note that the dove-tail of this part of cavity is made at expense of buccal (B) portion, while lingual (L) is nearly straight mesio-distally.

In proximal portion of cavity the axial wall (A) should meet the pulpal wall (P) at right angles and also form right angles with the gingival wall (G). The buccal (BB) and lingual (LL) walls of the proximal portion should also form right angles with the axial (A) and gingival (G) walls, thus forming box form for retention.

Retention form is cut along bucco-axial and linguo-axial line angles beginning at gingivo-bucco-axial or gingivo-linguo-axial point angle and cutting occlusally one-third to one-half the distance to the pulpal wall. Buccal and lingual walls of proximal portion of cavity should be parallel with long axis of tooth, while pulpal wall and gingival wall should be parallel with each other and also parallel with mesio-distal plane of tooth.

Notice general curvature of cavo-surface bevel at gingivo-buccal and gingivo-lingual angles (HH).

"C." Represents convenience as cut in the cavity.

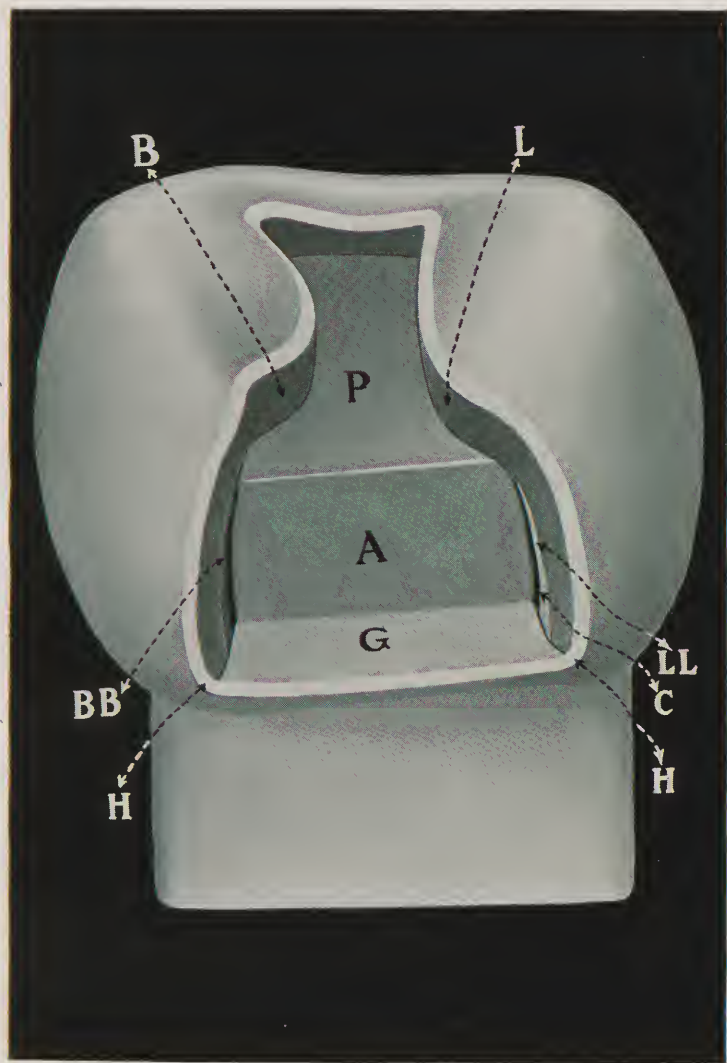


FIG. II.

Fig. III.

Illustrates preparation of 2nd class cavity in upper molar where transverse ridge has not been affected. Retention is obtained by extending cavity along developmental groove on occlusal sufficiently to give the dove-tail form.

Proximal portion prepared as explained under Fig. 2. AA represents convenience as previously explained relative to Fig. II.

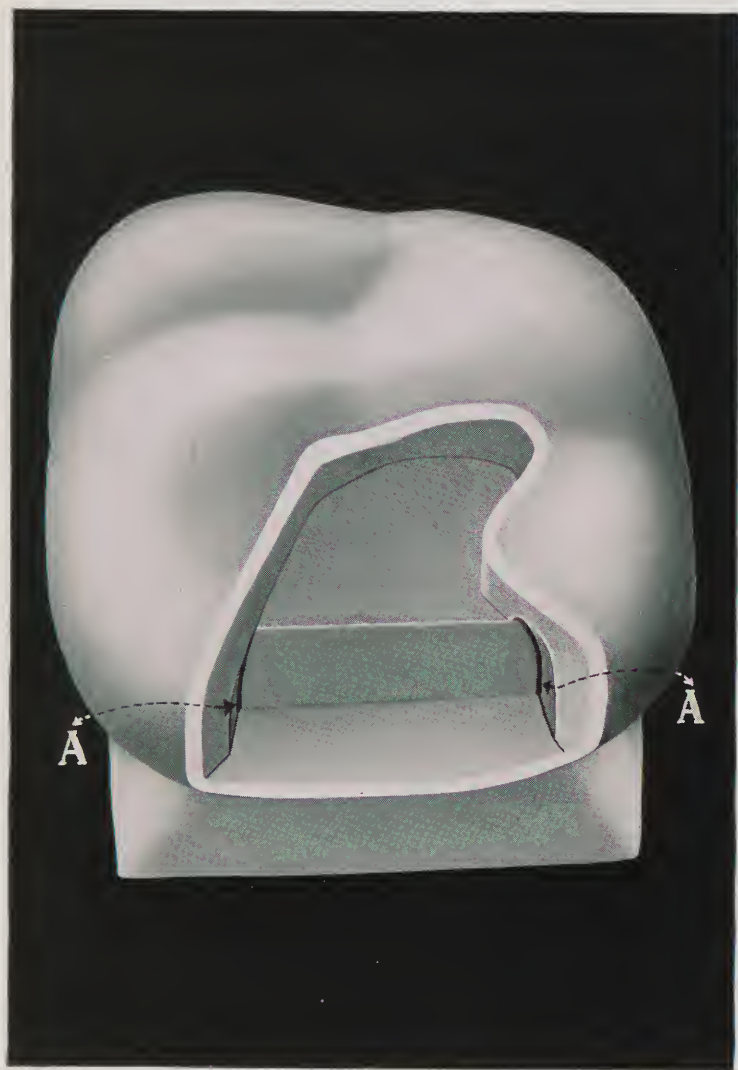


FIG. III.

Fig. IV.

Illustrates method of cutting convenience in proximal portion of 2nd class cavities and in other proximal cavities when access permits. This is done by using No. 6, 8 or 10 inverted cone bur and cutting at expense of both axial and buccal or axial and lingual walls along the line angles, thus lessening danger of weakening walls if cutting were all made at expense of lingual or buccal walls.

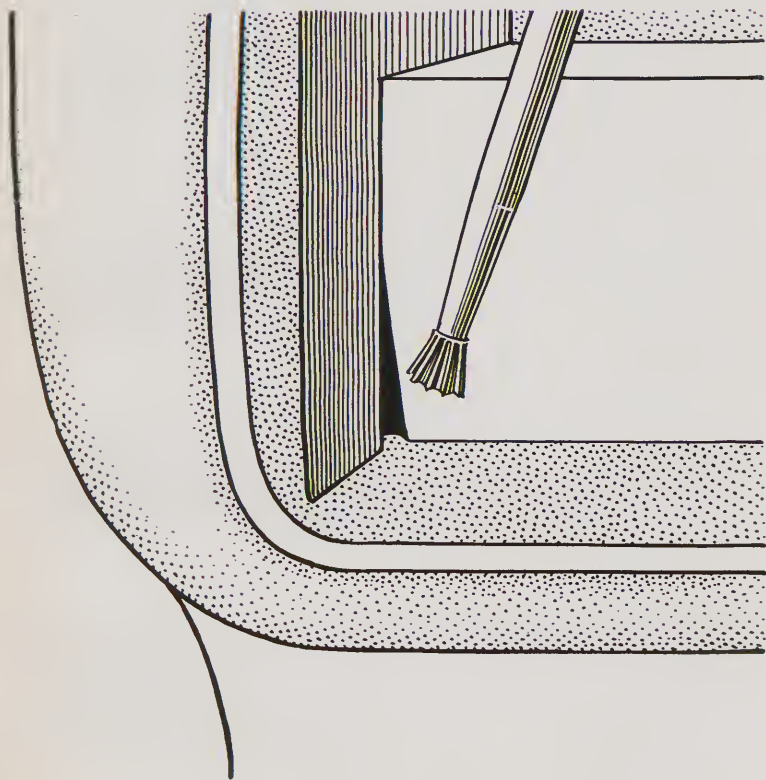


FIG. IV.

Fig. V.

Illustration shows 3rd class cavity prepared; axial wall (A) should form right angles with gingival wall (G); also with labial (La) and lingual (Li) walls, thus giving the box form for retention.

The enamel should be bevelled so as to conform with the direction of enamel rods, which is toward central portion of tooth.

Cavo-surface bevel of enamel is similar to that explained under 1st class cavity. Convenience for starting filling is obtained when possible as in proximal portion of 2nd class; but if proper access cannot be had with bur, this should be done with suitable hand instrument.

Incisal retention (A, Fig. 6) is best obtained with Black's hand instruments 3-2-28 or 5-3-28, but should never be made with bur.



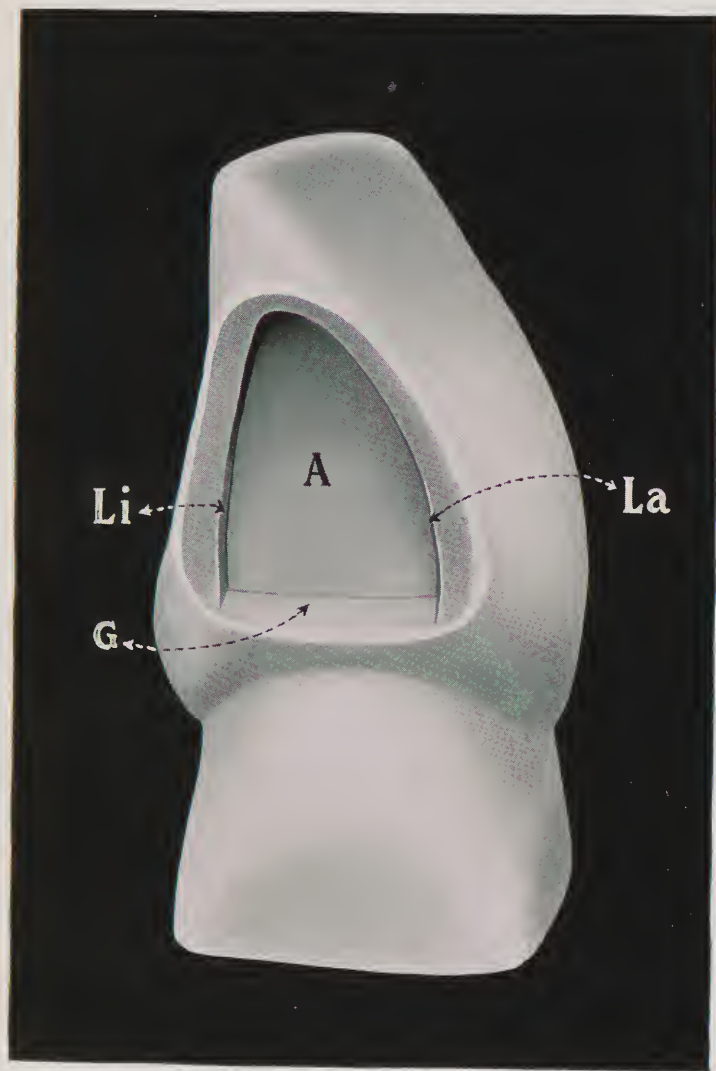


FIG. V.

Fig. VI.

Mesio-distal cross-section of 3rd class filling in incisor showing incisal retention (A). This is the chief retention in the 3rd class cavity, preventing filling from being tilted proximally.

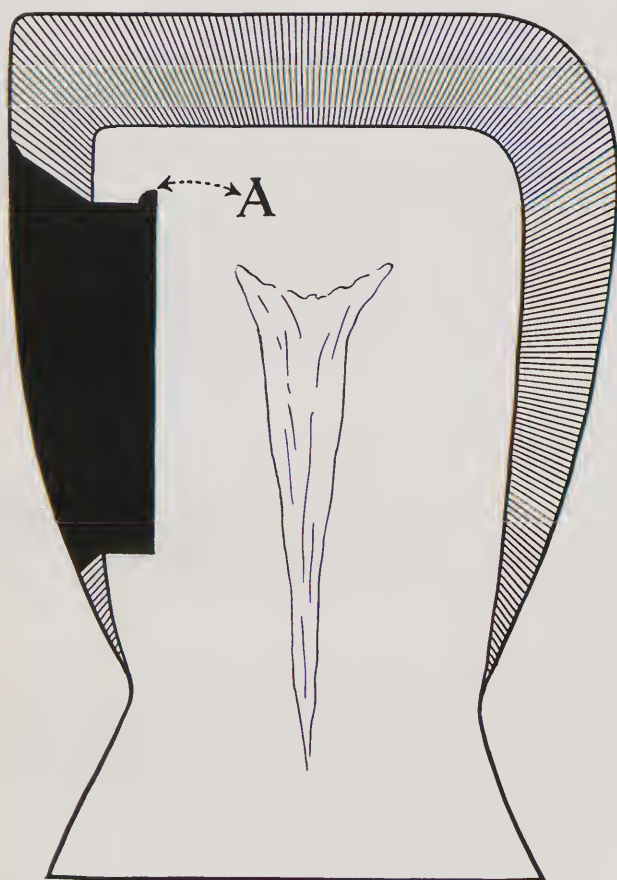


FIG. VI.

Fig. VII.

Illustrating mesio-distal cross-section of bicuspid at middle third of crown, showing the box form of cavity, slope of enamel wall (AA) and cavo-surface bevel of enamel (BB). Dotted lines (CC) indicate convenience which is cut in gingival third of cavity as explained relative to Fig. 2.

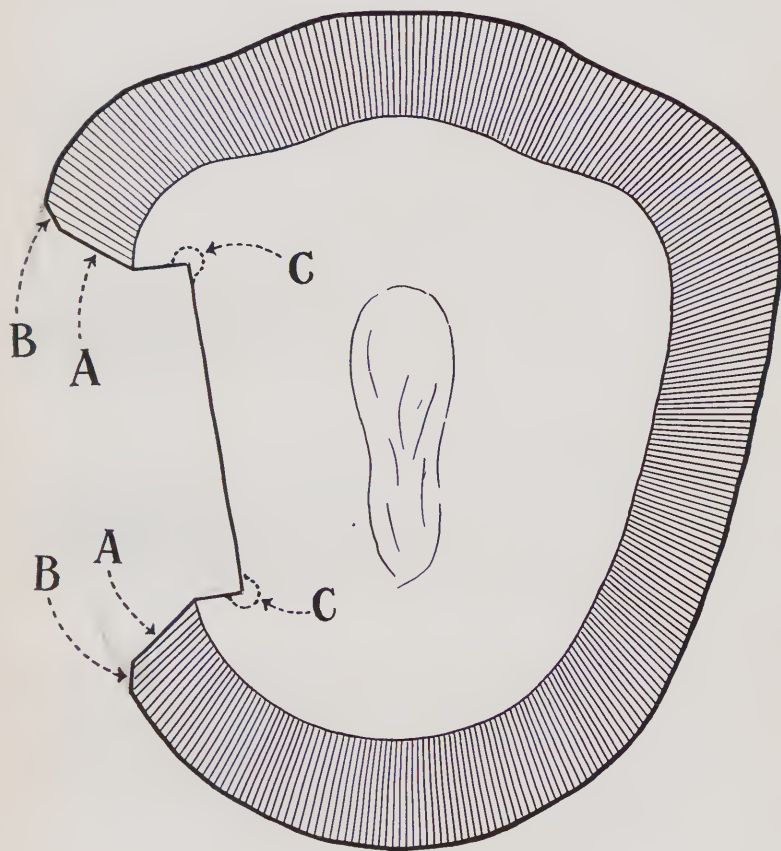


FIG. VII.

Fig. VIII.

Same as Fig. 7, with filling in place and cross-section at gingival third of cavity to show convenience grooves (CC) and bevels (AA—BB).

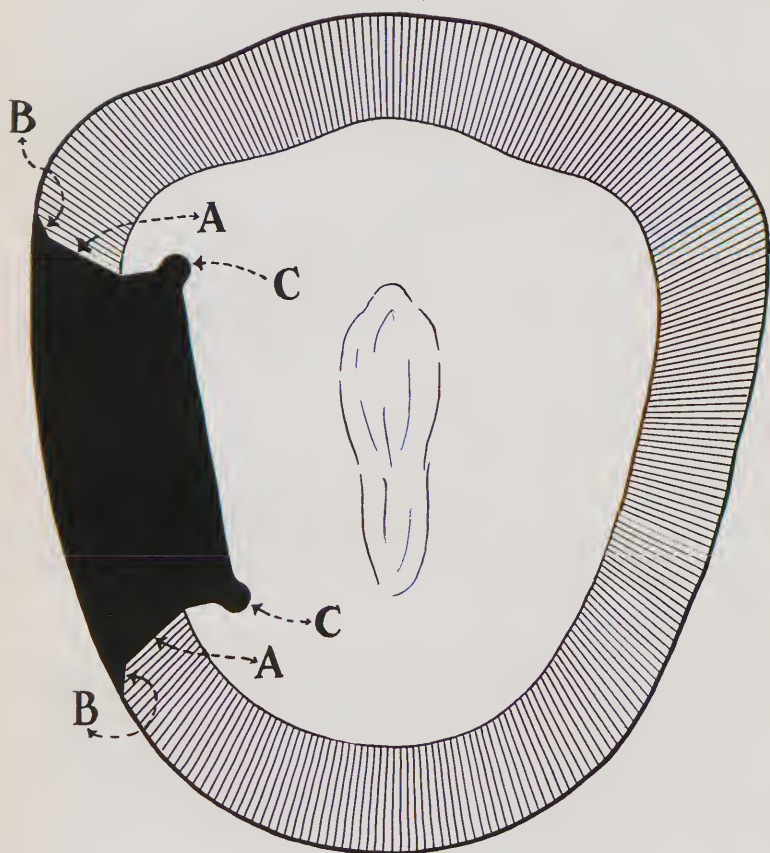


FIG. VIII.

## Fig. IX.

Illustration showing 4th class cavity prepared.

The proximal portion of this cavity is same as the 3rd class, excepting that it usually extends farther on lingual and labial, owing to destruction of tooth substance.

Fig. 10 shows details of preparation of incisal step.

The pulpal wall of incisal step (PW) should be parallel with gingival wall of proximal portion of cavity (GW).





FIG. IX.

Fig. X.

Showing details of incisal step of 4th class cavity preparation.

The bevel of labial and lingual walls are both in same plane (AA), while the incisal edge of the lingual wall (IE) is then slightly flattened (trimmed parallel with pulpal wall of incisal step—P).

All cavo-surfaces of enamel slightly bevelled, BBB. Lingual wall of incisal step should be parallel to long axis of tooth and meet pulpal wall at right angles, while the labial wall (LW) should be nearly parallel to labial plane of tooth, thus forming strong retention for incisal portion of filling. Labial plate should be left heavy or thick and supported with dentine, while lingual wall is cut much lower to afford strength and ample tooth structure for preparation of step. Lingual wall should be about one-half as high as step is wide. No pits, depressions or undercuts are necessary.

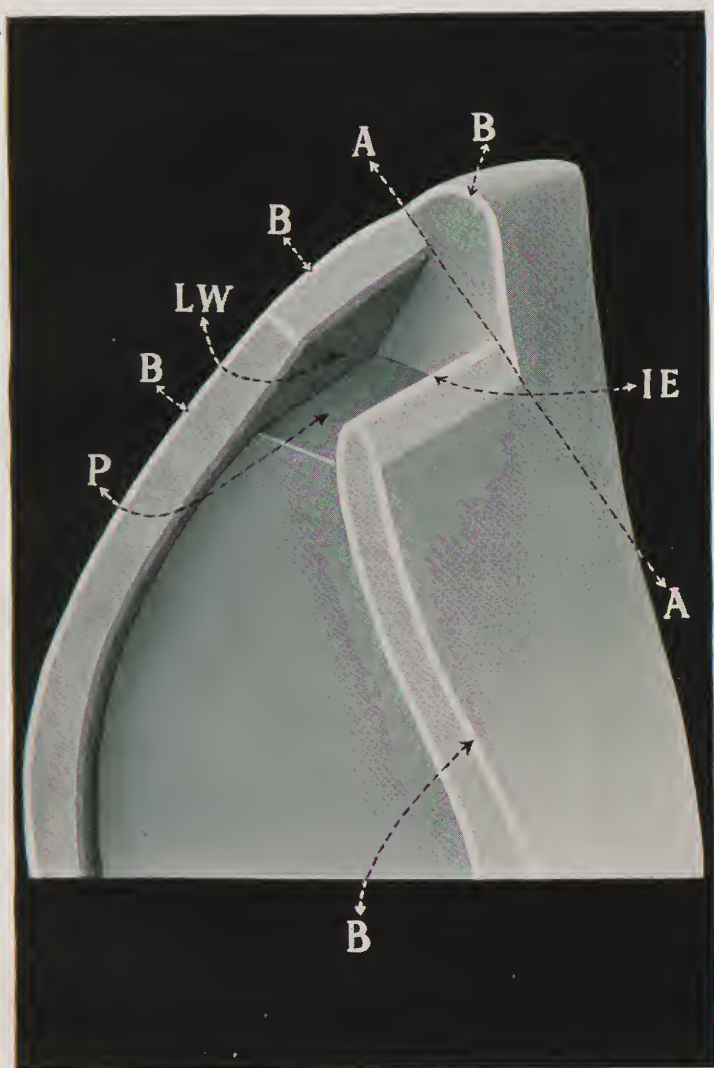


FIG. X.

Fig. XI.

Showing 4th class cavity filled. (Labial view.)

But very little gold shows on incisal, although well supported by the strong lingual reinforcement.

If cavity is on mesial of tooth, incisal step should extend to distal developmental groove, and if on distal, should be carried to mesial developmental groove (A).



FIG. XI.

Fig. XII.

Showing 5th class cavity prepared in cuspid tooth.

Retention is obtained by making a slight undercut with inverted cone bur along inciso-axial and gingivo-axial angles (AA). (See also Fig. 13, AA.)

It is often necessary to remove all enamel at gingiva while the cavo-surface of enamel is bevelled but slightly.

All walls should meet axial wall at right angles.

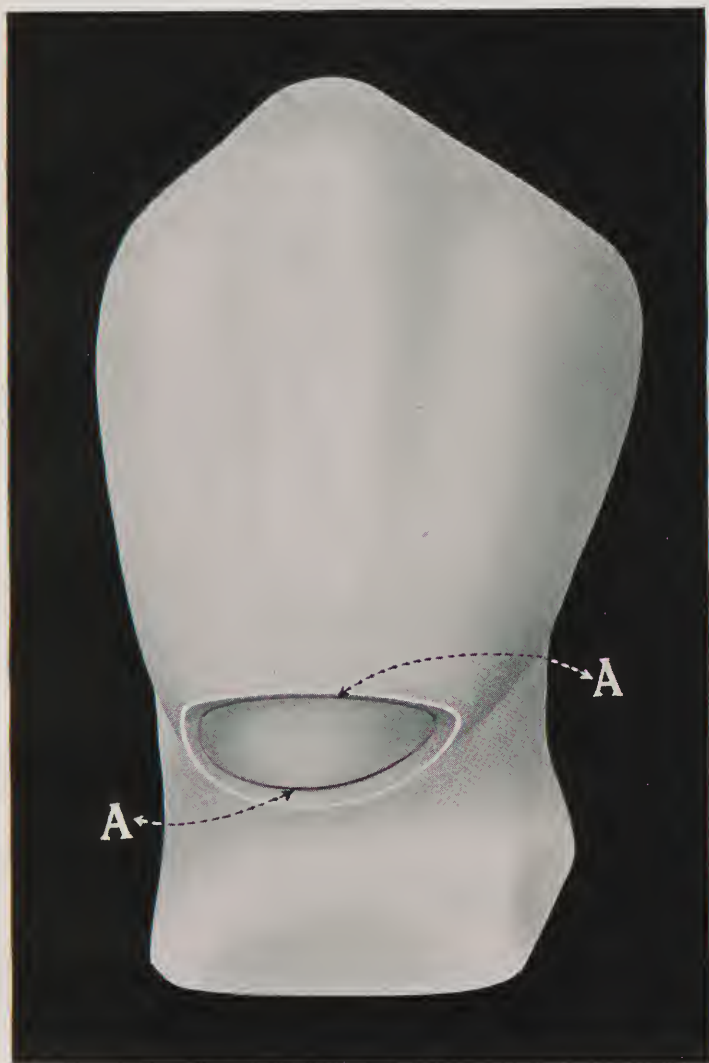


FIG. XII.

Fig. XIII.

Labio-lingual cross-section of tooth through 5th class filling to show retention (AA), as explained relative to Fig. XII.

Notice that cavo-surface margins are but slightly bevelled.



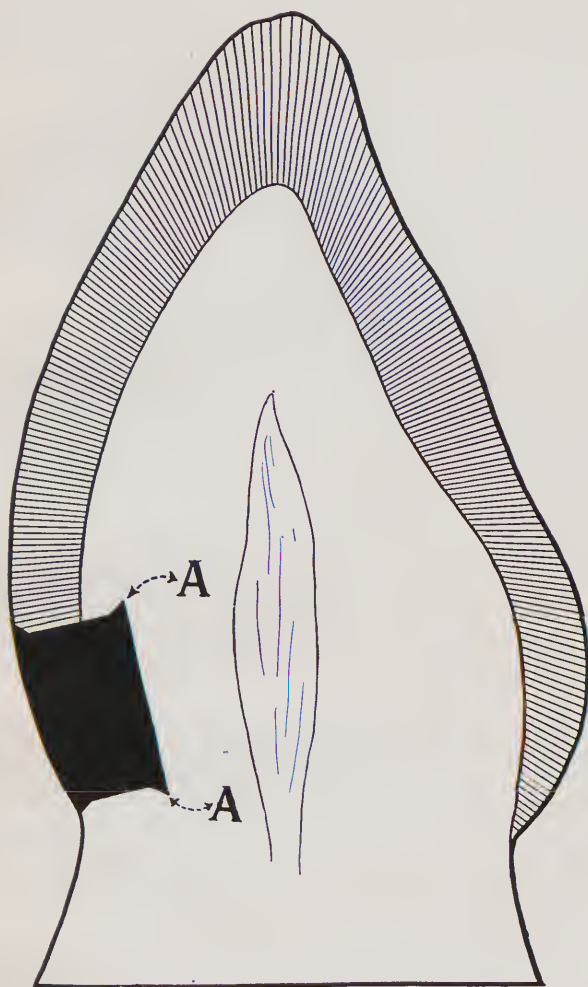


FIG. XIII.











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